

Appl. No. 10/754,389
Amtd. Dated: January 31, 2005
Reply to Office Action of November 1, 2004

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listing, of claims in the application:

1. (Currently Amended) A chip light emitting diode comprising:
a metal pad and a lead spaced away from each other on a printed circuit board;
a light emitting chip mounted on the metal pad;
a wire connecting the light emitting chip and the lead; and
a resin package sealing the light emitting chip and at least a part of the metal pad, lead, and the wire, the resin package having at least one curved projecting part, the at least one curved projecting part having a cross section elongated along the printed circuit board.
2. (Currently Amended) A chip light emitting diode as recited in claim 1, wherein the cross section of the curved projecting part ~~has a cross section which is~~ substantially semicircular, or substantially or partially elliptical or parabolic.
3. (Currently Amended) A chip light emitting diode as recited in claim 1, wherein the cross section of the curved projecting part ~~has a cross section which is~~ comprised of a plurality of straight lines with an angle formed between adjacent lines.
4. (Original) A chip light emitting diode as recited in claim 1, wherein at least one stepped part is formed at an outer edge of the resin package.
5. (Original) A chip light emitting diode as recited in claim 1, wherein the surface of the resin package has fine striations to scattering light emitted from the light emitting chip.
6. (Original) A chip light emitting diode as recited in claim 1, wherein the resin package has one projecting part.

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7. (Currently Amended) A chip light emitting diode as recited in claim 1, wherein the resin package has two projecting parts which are spaced away from each other by a predetermined interval,

wherein the predetermined interval ranges from 0.1 to 0.4 times a bottom length of the resin package.

8. (Currently Amended) A fabrication method of a chip light emitting diode, comprising the steps of:

mounting a light emitting chip on a metal pad formed on a printed circuit board;
connecting the light emitting chip to a lead formed on the printed circuit board with a wire;

providing the printed circuit board within a mold having at least one cavity, the cavity corresponding to at least one projecting part of the chip light emitting diode; and
injecting resin material into the at least one cavity of the mold to forming a resin package having at least one curved projecting part corresponding to the at least one cavity of the mold, the resin package sealing the light emitting chip and at least a part of the metal pad and at least a part of the lead by injecting resin material into the cavity of the mold, the resin package having at least one curved projecting part.

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9. (New) The fabrication method as recited in claim 8, wherein the curved projecting part of the resin package has a cross section elongated along the printed circuit board.

10. (New) The fabrication method as recited in claim 8, wherein the curved projecting part of the resin package includes a plurality of straight lines with an angle formed between adjacent lines.

11. (New) The fabrication method as recited in claim 8, further comprising forming at least one stepped part at an outer edge of the resin package.

12. (New) The fabrication method as recited in claim 8, wherein the surface of the resin package has fine striations to scattering light emitted from the light emitting chip.

13. (New) A fabrication method of a chip light emitting diode comprising:
mounting a plurality of light emitting chips on metal pads formed on the printed circuit board;

connecting the light emitting chips to leads formed on the printed circuit board with wires;

providing the printed circuit board within a mold having a plurality of cavities;
injecting resin material into the at least one cavity of the mold to form a plurality of resin packages, each of the resin packages having at least one curved projecting part corresponding to one of the cavities of the mold, the resin packages sealing the light emitting chips and at least a part of the metal pads and at least a part of the leads; and

cutting off the printed circuit board and the resin packages together to separate the chip light emitting diodes from each other, each of the separated chip light emitting diodes having the curved projecting part, which has a cross section, elongated along the cut printed circuit board.